

# Missed Opportunity: Patients Who Leave Emergency Departments without Being Seen

Occasions manquées : les patients qui repartent  
des services d'urgence sans avoir été examinés



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## Abstract

The rate of patients who visit emergency departments (EDs) but leave before being evaluated and treated is an important indicator of ED performance. This study examines patient- and hospital-level characteristics that may increase the risk of patients leaving EDs before being seen. The data are from the National Ambulatory Care Reporting System, an administrative database, and represent 4.3 million patient visits made to 163 Ontario EDs between April 2003 and March 2004. Among these data, the proportion that left without being seen (LWBS) was 3.1% (136,805). The rate of LWBS was highest among patients aged 15 to 35 years, those with less acute conditions and facilities that handle the highest volume of patients. Facility rates were positively correlated with facility median ED length of stay, annual facility volume and percentage of inpatient admissions. Understanding patient and facility characteristics that increase rates of LWBS may inform the process of developing measures to ensure timely access to ED care for all who seek it.

## Résumé

Le taux de patients qui se présentent dans un service d'urgence, mais en repartent avant d'avoir été examinés et traités est un élément révélateur important de la performance d'un service d'urgence. La présente étude se penche sur les caractéristiques des patients et des hôpitaux qui sont susceptibles d'augmenter le risque que les patients repartent des services d'urgence sans avoir été examinés. Les données sont issues de la base de données administrative qu'est le Système national d'information sur les soins ambulatoires et représentent 4,3 millions de visites effectuées dans 163 services d'urgence en Ontario entre avril 2003 et mars 2004. D'après ces données, le taux de patients qui sont repartis sans avoir été examinés était de 3,1 % (soit 136 805 patients). Ce taux était le plus élevé chez les patients âgés de 15 à 35 ans, chez ceux n'étant pas dans un état très grave et dans les établissements qui traitent le plus de patients. Les taux par établissement étaient étroitement liés à la durée moyenne passée dans le service d'urgence, le volume et le pourcentage annuels de malades hospitalisés des établissements en question. Connaître les caractéristiques des patients et des établissements qui font augmenter le taux de patients qui repartent sans avoir été examinés pourrait être utile pour mettre en place des mesures visant à rendre les services d'urgence accessibles en temps opportun à toute personne qui en a besoin.

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**A** SMALL BUT IMPORTANT FRACTION OF PATIENTS WHO GO TO EMERGENCY departments (EDs) never get care because they leave before being evaluated and treated. The rate at which this occurs is an indicator of ED performance

(US General Accounting Office 2003). In the United States in 2001–2002, between 1.4% and 1.9% of patients left EDs without being seen (McCaig and Burt 2004; US General Accounting Office 2003). In Australia, the rate in 2003–2004 was reported to be higher (5.2%; Australian Institute of Health and Welfare 2005). In Canada, published estimates based on single-facility studies are 1.4% (Fernandes et al. 1994) and 3.6% (Monzon et al. 2005).

Internationally, studies of factors associated with patients leaving EDs before being seen have focused on patient- and hospital-related issues. For example, acute psychological distress at the time of visit (Weissberg et al. 1986), pressing commitments elsewhere (Fernandes et al. 1994), perceived poor communication with staff (Fernandes et al. 1994; Arendt et al. 2003) and low acuity with spontaneous resolution of symptoms while waiting (Goldman et al. 2005) are some of the patient-related factors that have been documented to date. A hospital-related factor identified in many studies is prolonged waiting time to see a physician (Fernandes et al. 1994; US General Accounting Office 2003; Kyriacou et al. 1999).

This study investigates how often patients leave Ontario EDs without being seen (LWBS) and considers both patient- and facility-level factors that may be associated with increased risk for LWBS.

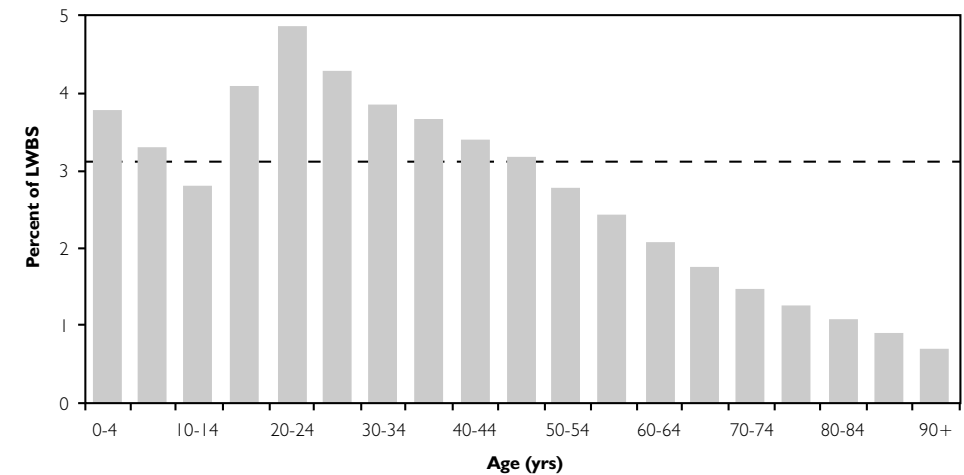
## Methods

Our analysis included records of 4.3 million visits to 163 Ontario EDs that took place between April 1, 2003 and March 31, 2004 obtained from the National Ambulatory Care Reporting System (NACRS) database of the Canadian Institute for Health Information (CIHI). LWBS patients were identified through the documented visit disposition. They had either registered but left before being triaged or were triaged but left before being seen by a physician. Patient characteristics examined included gender, age, triage score and length of stay in the ED (EDLOS). Triage score was based on the Canadian Triage and Acuity Scale (CTAS). It is a five-point scale with the following values: 1 – resuscitation required; 2 – emergent care required; 3 – urgent care required; 4 – semi-urgent care required; and 5 – non-urgent care required (Beveridge et al. 1999). The EDLOS was calculated as the difference between the time of registration or triage (whichever came first) and the time of visit completion. Potential associations between individual facility characteristics (annual volume of ED visits, percentage of inpatient admissions and overall median EDLOS) and their LWBS rates were estimated through Pearson's correlation coefficient ( $r$ ).

## Results

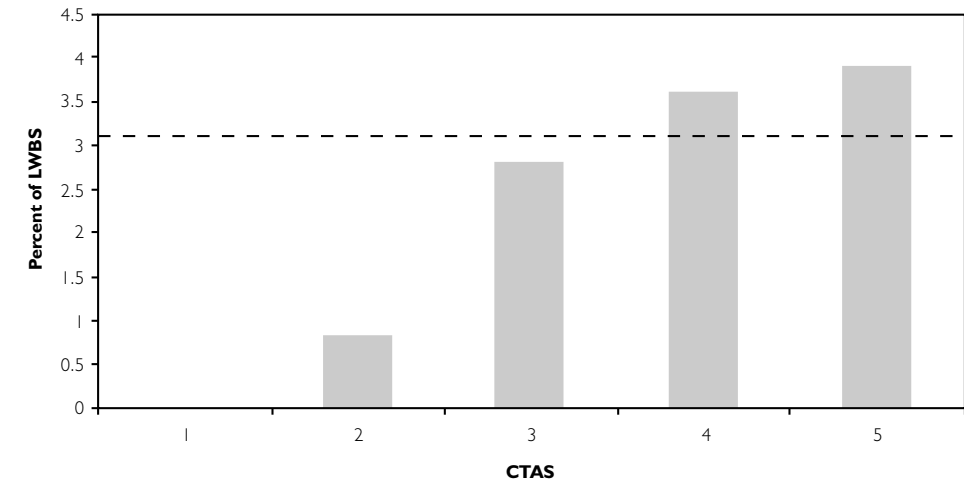
In 2003–2004, 3.1% ( $n=136,805$ ) of patients who went to Ontario's EDs left without

FIGURE 1. Percentage of patients who left without being seen (LWBS) by age



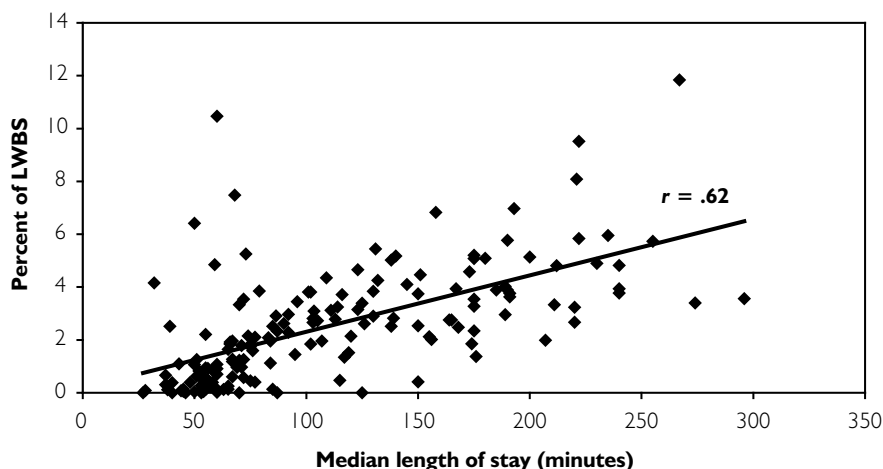
Note: Data represent visits to 163 Ontario-based emergency departments between April 1, 2003 and March 31, 2004.  
Source: National Ambulatory Care Reporting System, CIHI

FIGURE 2. Percentage of patients who left without being seen (LWBS) by acuity level



Note: Data represent visits to 163 Ontario-based emergency departments between April 1, 2003 and March 31, 2004.  
Source: National Ambulatory Care Reporting System, CIHI

FIGURE 3. Relationship between the percentage of patients who left without being seen (LWBS) and median lengths of stay



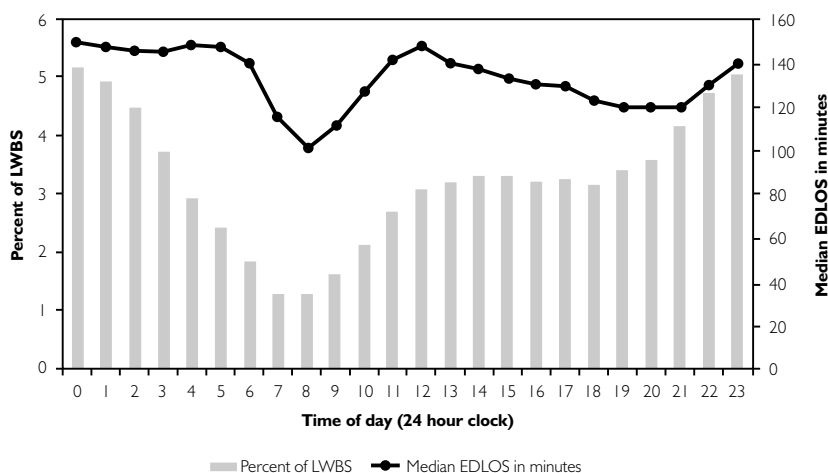
Note: Data represent visits to 163 Ontario-based emergency departments between April 1, 2003 and March 31, 2004.  
Source: National Ambulatory Care Reporting System, CIHI

being seen by a physician. This percentage ranged from 0.1% to 12% among facilities across the province. Analysis of patient records indicated that the annual return rate to EDs for LWBS patients was 5.5%. Of those that returned, 21% returned within 72 hours to a facility.

Males and females were equally likely to leave EDs without being seen, but there was considerable variation by age, with LWBS rates being highest among those 15–35 years old (Figure 1). Patients with CTAS scores of 4 and 5, corresponding to less urgent conditions, were also more likely to leave before being seen than those triaged with more urgent CTAS scores (e.g., 2 and 3). Overall, high-volume EDs (those with annual patient visit volume of more than 30,000) and teaching hospital EDs had higher rates of LWBS patients (3.7% and 3.1%, respectively) than either medium-volume EDs (2.6%; annual patient visit volume between 15,000 and 29,999) or low-volume EDs (1.8%; annual patient visit volume under 15,000). The median time LWBS patients spent in the ED before leaving (103 minutes) was double that of the median time that those who stayed and were treated waited to be seen by a physician (51 minutes).

Facility characteristics such as the annual volume of ED visits, percentage of inpatient admissions and median EDLOS were all positively correlated with LWBS rates. However, the facility median EDLOS showed the strongest correlation with

FIGURE 4. Circadian distributions of patients who left without being seen (LWBS) and median lengths of stay (EDLOS)



Note: Data represent visits to 163 Ontario-based emergency departments between April 1, 2003 and March 31, 2004.  
Source: National Ambulatory Care Reporting System, CIHI

percentage of patients who left without being seen:  $r=.62$  (Figure 3). The strength of this correlation was further demonstrated by similar circadian distributions of median EDLOS and LWBS rates (Figure 4). Overall, patients were more likely to leave when the median EDLOS was longest (around midnight) and least likely to leave when the median EDLOS was shortest (between 7 and 9 a.m.).

## Conclusion

The percentage of LWBS patients has recently been proposed as an indication of ED overcrowding (Weiss et al. 2005). It has also been suggested as a measure of patient satisfaction with ED services (Fernandes et al. 1994; Arendt et al. 2003). In this large population-based study we found that approximately 3% of patients who went to Ontario EDs in 2003–2004 left before being seen by a physician. Both patient and healthcare facility characteristics were related to increased rates of LWBS patients. For example, being 15–35 years of age, having higher triage scores (i.e., less urgent conditions), visiting teaching and high-volume EDs and time of visit were all related to increased rates of LWBS. Understanding the factors that contribute to higher rates of LWBS within facilities can help ensure adequate provision of needed services.

REFERENCES

- Arendt, K.W., A.T. Sadosty, A.L. Weaver, C.R. Brent and E.T. Boie. 2003. "The Left-Without-Being-Seen Patients: What Would Keep Them from Leaving?" *Annals of Emergency Medicine* 42(3): 317–23.
- Australian Institute of Health and Welfare (AIHW). 2005. *Australian Hospital Statistics 2003–04*. AIHW Catalogue No. HSE37. Canberra: Author.
- Beveridge, R., B. Clarke, L. Janes, N. Savage, J. Thompson, G. Dodd et al. 1999. "Implementation Guidelines for the Canadian Emergency Department Triage and Acuity Scale (CTAS)." *Canadian Journal of Emergency Medicine* 1(3 Suppl.). Retrieved April 26, 2006. <<http://www.caep.ca/002.policies/002-02.CTAS/CTAS-guidelines.htm>>.
- Fernandes, C.M., M.R. Daya, S. Barry and N. Palmer. 1994. "Emergency Department Patients Who Leave Without Seeing a Physician: The Toronto Hospital Experience." *Annals of Emergency Medicine* 24(6): 1092–96.
- Goldman, R.D., A. Macpherson, S. Schuh, C. Mulligan and J. Pirie. 2005. "Patients Who Leave the Pediatric Emergency Department Without Being Seen: A Case-Control Study." *Canadian Medical Association Journal* 172(1): 39–43.
- Kyriacou, D.N., V. Ricketts, P.L. Dyne, M.D. McCollough and D.A. Talan. 1999. "A 5-Year Time Study Analysis of Emergency Department Patient Care Efficiency." *Annals of Emergency Medicine* 34(3): 326–35.
- McCaig, L.F. and C.W. Burt. 2004. "National Hospital Ambulatory Medical Care Survey: 2002 Emergency Department Summary." *Advance Data* 18(340): 1–34.
- Monzon, J., S.M. Friedman, C. Clarke and T. Arenovich. 2005. "Patients Who Leave the Emergency Department Without Being Seen by a Physician: A Control-Matched Study." *Canadian Journal of Emergency Medicine* 7(2): 107–13.
- US General Accounting Office. 2003. "Hospital Emergency Departments: Crowded Conditions Vary among Hospitals and Communities." Washington, DC: Author. Retrieved April 26, 2006. <<http://www.gao.gov/new.items/d03460.pdf>>.
- Weiss, S.J., A.A. Ernst, R. Derlet, R. King, A. Bair and T.G. Nick. 2005. "Relationship Between the National ED Overcrowding Scale and the Number of Patients Who Leave Without Being Seen in an Academic ED." *American Journal of Emergency Medicine* 23(3): 288–94.
- Weissberg, M.P., M. Heitner, S.R. Lowenstein and G. Keefer. 1986. "Patients Who Leave Without Being Seen." *Annals of Emergency Medicine* 15(7): 813–17.


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